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3rd Quarter 2012

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in **One Basket**

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IT Outsourcing Requirements

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Securing Servers **in the Cloud**

See Page 11

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by Erin E. Harrison

Five Cloud Trends to Watch Now

It's no surprise to anyone reading this that what the future holds for cloud computing is uncertain – which is why analysis of the market needs frequent review and it's what we strive to provide within each issue of *Cloud Computing*.

I recently had the opportunity to meet with dozens of cloud leaders at Cloud Expo in New York City – from storage providers to VDI vendors to security and authentication solution companies, the common message among these IT thought leaders is that cloud is not only here to stay, but it's reached a Rubicon of sorts. Cloud is now being embraced by a majority of enterprise IT departments, at least according to attendees and vendors at the 10th Annual Cloud Expo.

As the cloud model takes hold, it promises to offer higher-value business activities, lower costs and more innovation. Gartner recently identified five cloud computing "subtrends" that will be accelerating, shifting or reaching a tipping point over the next three years – and that users and providers alike must consider:

1. Cloud Activity Shifting to Higher Value

As the cloud model matures, issues will arise over security, availability, integration and vendor lock-in. These prospective benefits need to be examined carefully and mapped against these challenges, which create a complex environment in which to evaluate individual cloud offerings.

2. Hybrid Clouds Gain Traction

Businesses are taking advantage of the cloud in varying forms – utilizing public, private and hybrid models, with some on-premise computing. Eventually, companies may adopt a hybrid mixture of all three, depending on their changing business requirements. Enterprises need to focus near-term efforts on application and data integration, linking fixed internal and external applications with a hybrid solution, according to Gartner.

3. Cloud Brokers Facilitating Consumption

Since companies need help migrating IT resources to the cloud, the demand for cloud services brokerages will continue to increase. IT departments should consider how they can position themselves as brokers by setting up a purchasing process for cloud adoption so that business units will look to them for support.

4. Cloud-Centric Design

Businesses should look beyond merely moving enterprise workloads to the cloud and instead to the development of apps optimized for the cloud. Such an approach would take advantage of the special characteristics, opportunities and limitations of a cloud model.

5. Data Center Development Influenced By Cloud

To the extent that the enterprise continues to build its own data centers, the implementation models used by cloud services providers will influence them. Enterprises need to apply the concepts of cloud computing to future data center and infrastructure investments to increase agility and efficiency.

These five trends are shaping the cloud movement as we see it today. In this issue of *Cloud Computing*, we also explore other important emerging subtrends and topics, including the impact cloud is having on IT outsourcing, the significance of application performance management – and don't miss our cover story on how cloud providers can monetize SaaS.

by Rich Tehrani

Connection Cloud Brings the Power of 4GL to the Cloud

As enterprises move more and more of their data into the cloud, the reality is they lose more control over the information they store on services from companies like Netsuite, Oracle and Salesforce. In order to get programmatic access to your data you need to become familiar with the APIs of each vendor and then deal with the intricacies of what information they make available.

And let's say you decide to switch from one cloud vendor to another – you have to first get the data out into a new proprietary cloud format and learn a new set of APIs to get at the data.

The situation isn't unlike the database world before the advent of SQL – where a single, slightly altered language worked with a variety of databases. To make life even easier for database developers, in the late 1980s and 1990s, a variety of fourth-generation application languages, or 4GL programming tools emerged which were part pseudocode-like language and part SQL. Pascal or BASIC merging with SQL.

One of the common 4GL programming languages at the time was made by database company Informix. The co-founder of the company, Roger Sippl has a new venture that could bring the power of 4GL to the cloud. I had the chance to catch up with him recently and learn about how – for the last four years – his company Connection Cloud has effectively positioned itself as the database middleware of the cloud.

Rather than having to learn each language, a programmer uses an ODBC driver from Connection Cloud which deals with the intricacies of each cloud vendor, allowing a virtualized representation of the data to be seen by programmers and users. As you can imagine since it is a service, you can write queries which access data from multiple clouds at once and even tie the results into reporting apps, spreadsheets or any other software. You could even write queries to take data from some clouds, massage it and write it back to the same clouds or even other ones.

Of course you could use the cloud data for any reason – even to provide data to local apps. These decisions are totally up to you. Moreover, besides SQL, you can use web services and JDBC to access the data.

The company has been the report-generating back-end of cloud-based subscription management system Zuora for over a year, but its future business model will likely rely more on end-users and programmers. Connection Cloud is still in beta but will be out in about a month. At that time, pricing will likely be around $99/seat – a free version and/or free trial may exist as well. There will also be workgroup and enterprise pricing for volume purchases.

There are currently connectors for Salesforce, Zendesk, Intacct, Google Docs and Spreadsheets, Netsuite, Zuora and Facebook. And this data can be used in applications such as Excel, JasperSoft, Yellowfin, Tibco and Tableau. Expect more connections to be added over time.

In addition, programmers will be able to use languages such as Java, Ruby on Rail and PHP. According to Sippl, Connection Cloud allows these languages to act just like 4GL– as if the database was located in MySQL under the desk.

One of the major challenges the cloud presents to companies is that they feel a loss of control over their data. Connection Cloud should seriously alleviate these concerns. In fact, by abstracting cloud data, they make the move to the cloud much more attractive.

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On the Cover

24 In order to maximize the value vendors derive from their software offering, their strategy needs to take into consideration each aspect of software monetization.

28 CIOs and IT managers need to stop thinking of cloud as an autonomous system and start treating it as part of a global application delivery architecture.

30 The ability to support the cloud business model requires new roles within the IT organization.

32 Many times planning for application performance management (APM) gets lost in the process of defining the infrastructure requirements and implementation of the cloud components.

21 Making your cloud servers impenetrable is a must-do for every IT administrator working to migrate applications and other critical data to the cloud.

Inside Contents

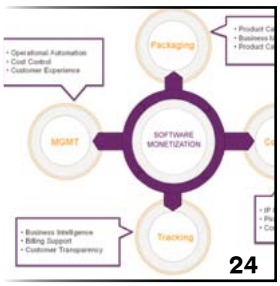
In Every Issue

Cover Story

Feature Articles

Special Feature

Columns



24


28


30

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Sonian Secures $13.6 Million in Funding

Sonian, a provider of cloud-powered archiving and search services, has secured $13.6 million in funding from investors OpenView Venture Partners along with Summerhill Venture Partners and Prism VentureWorks. This latest infusion brings the firm's total investment to nearly $27 million. Company officials said the new funding will help scale sales and marketing and accelerate cloud archiving products innovation.

Sonian officials said the company has doubled its customer base experienced record growth in the last four consecutive quarters in the last two years. Cloud-based solutions like Sonian will account for 50 percent of total email archiving market revenue. Sonian already offers cloud storage management for over 9,000 customer organizations with its single reference architecture that operates across multiple public clouds.

The Bottom Line: With many companies looking to manage their mailboxes in the cloud, the new funding positions Sonian to effectively offer scalable e-mailing archiving and Big Data solutions that maximize cloud benefits.

http://tmcnet.com/59192.1

Five9 Completes $12 Million Funding Round

The call center is moving to the cloud, and investors are willing to put their cash behind it. Cloud-based contact center solutions provider Five9 Inc. announced the completion of an additional round of equity financing that raised $12 million for the San Ramon, Calif.-based company.

The additional funding follows record revenue growth in 2011 for Five9, exceeding 70 percent growth over 2010 revenues. The latest financing round was led by Adams Street Partners with Hummer Winblad Venture Capital and Partech International also participating. In total, Five9 has raised more than $49 million in funding to date.

The Bottom Line: Five9 is well-positioned as the strongest solution for enterprises looking to replace legacy on-premise Cisco, Avaya and Genesys systems, according to David Welsh, a partner with Adams Street Partners. He says the company has demonstrated exceptional technical capability, combined with prudent financial management, through periods of high revenue growth and increasing market share.

http://tmcnet.com/59193.1

Alert Logic Closes $12.2 Million in Series F Funding

Alert Logic, a provider of Security-as-a-Service for the cloud, has closed a $12.2 million round of financing led by new investors Industry Ventures and DH Capital, and joined by all existing investment firms and several members of the company's management team including Updata Partners, Covera Ventures, DFJ Mercury, OCA Ventures and Access Venture Partners.

"After tripling the size of our company in less than three years and building a customer base of over 1,700 customers representing nearly $30 million in annual recurring revenue, we remain focused on delivering security and compliance solutions to customers of cloud providers," said Gray Hall, president and CEO at Alert Logic.

The Bottom Line: Alert Logic will use the funding to accelerate the growth of its new Web Security Manager product line, including deployment of Web Security Manager throughout Alert Logic's channel of hosting and cloud service provider partners, and to accelerate the growth and adoption of the company's new elastic cloud security solutions.

http://tmcnet.com/59194.1

NextIO Raises $12.3 Million in Series F Funding

NextIO, Inc. a U.S.-based developer of I/O virtualization solutions for enterprise-class computer servers, has secured $12.3 million in its Series F round of funding from existing investors and an undisclosed strategic investor.

NextIO will use the funds to fuel worldwide expansion of its I/O consolidation solutions for datacenters, managed service providers, and cloud computing environments. NextIO's customer base includes technology leaders in a variety of markets, including managed service providers, Internet service providers, aerospace, automotive technologies, oil and gas, government and finance.

The Bottom Line: The explosion of data and the migration to the cloud presents a great opportunity in this market. In 2011 alone, several hundred NextIO I/O consolidation systems were installed into these customers worldwide.

http://tmcnet.com/59195.1

Xand-Access Northeast Merger Brings Regional Data Center

Data center solutions provider Xand has merged with Access Northeast to create a large data center company operating out of the Northeast. Together the new entity will offer its colocation, cloud and managed services to 1,000 clients in New York, Connecticut and Massachusetts.

"Xand and Access Northeast both share a strong commitment to providing excellent service and innovative solutions to our customers," said David Struwas, CEO of Xand. "The synergies between our firms will only serve to reinforce this message to the northeast marketplace."

The Bottom Line: The combined services offered as a result of the merger will help these enterprises deploy their strategic business continuity and disaster recovery plans to the tri-state area in an efficient and enhanced manner.

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by Gary Orenstein, Fusion-io

NAND Flash: Cloud Computing's Silver Lining

The cloud industry's rapid growth is good for business, but puts cloud providers under great pressure to scale to meet growing and volatile performance demands, while maintaining a viable business model.

Flash memory solves these problems for several cloud environments, including web-scale and SaaS providers. Growth projections in both web-scale and software-as-a-service sectors are extremely high. For example, eMarketer analyst Jeffrey Grau projects a $100 billion rise in ecommerce between 2010 and 2015. Gartner forecasts the total software revenue for SaaS delivery within the enterprise application software market to grow to around $23 billion by 2015.

Web-Scale Up, Not Out

Many web-scale companies seek to reduce or minimize the Tier 1 storage system costs and meet highly random data access patterns by adopting distributed, scale-out server architectures. The problem with these architectures is that operating costs, including hardware, software licenses, floor space, power and cooling, and IT maintenance and administration soon begin to erode margins, making competitive pricing a challenge. Additionally, as customer bases and data volume grow, even the most efficient scale-out systems reach performance limits – forcing companies to consider risky and costly architecture overhauls.

NAND flash-based technologies can solve both of these problems. First, it's possible to integrate flash into servers as an extension to memory so that each server delivers far more performance compared to hard disks – particularly when it comes to the random access patterns common to many OLTP web environments. Second, it enables web-scale to reduce aggregate DRAM needs to greatly lower power and cooling costs, particularly in caching tiers. Third, it can completely eliminate the need for performance disk arrays, reducing the number of system failure points and IT overhead.

One social networking company implemented NAND flash in its middle-tier caching farm to cut server footprint by 62 percent (280U of rack space), while eliminating 2,300 disk nodes to monitor and maintain.

Smarter Software as a Service (SaaS)

Most SaaS providers virtualize and share system resources to minimize costs to keep pricing competitive and protect their bottom line. The challenge many SaaS providers face is that each new customer adds unpredictable workload patterns that quickly reach the limit of disk-based capabilities. This problem is even worse for service providers like healthcare and government that must host multi-tenant databases to ensure all data is independent.

The challenge many SaaS providers face is that each new customer adds unpredictable workload patterns that quickly reach the limit of disk-based capabilities.

NAND flash-based technologies are ideal for resolving these challenges. They greatly increase per-server workload to decrease infrastructure needs. They are also much more resilient to traffic spikes ensuring SaaS providers meet SLAs without massive buildout. Additionally, they overcome the primary bottleneck of virtualization – the I/O blender effect, the abstraction layer in virtual environments that makes even sequential I/O random.

There are many examples of SaaS providers using flash technology to improve performance while reducing infrastructure costs. Here are a few cases:

- Host Europe GmbH implemented flash to increase per-server virtualized workloads 2-5x, while eliminating worry of interruptions and slowdowns from traffic spikes.
- Call center workforce management provider Pipkins moved its database to flash to exceed 6x per-server workload times, while realizing a payback period of "weeks to months."
- IBM Tivoli Server Manager (TSM) SaaS provider, FrontSafe, increased server workloads 3x while cutting its server footprint by 66 percent.

Summary

All signs indicate that cloud computing will become a dominant industry in the information technology landscape. But it can't scale to meet the world's insatiable thirst for faster processing of growing data volume without more efficient technologies than today's disk-based systems can provide. Flash memory provides the performance and capacities that cloud providers need, while at the same time keeping capital and operating costs in check.

Gary Orenstein is vice president of products at Fusion-io.

by Jason Alley, Interactive Intelligence

Harnessing the **Power** of **Customer Moments**

The future of customer care lies in the cloud and mobility, and the killer app for such mobility might be as simple as harnessing the power of customer moments.

Think about how we use our smart phones and tablets. We expect to pull these powerful computing devices out of our pockets and conduct the business or transaction of our choice – in the moment, on a moment's notice, with only a moment to spare.

It's All About the Moment. Or as a recent Forrester report termed it:

"Mobile apps empower customers, partners, and employees wherever they are in the context of that moment. People can serve themselves in the moment to accomplish a task, like check a status, find an expert, receive an alert, make a purchase, answer a question, share an opinion, or send a message."

Consider, for example, the scenario for checking a status. You have five minutes before boarding a plane when you grow curious about the status of the trouble ticket you opened earlier in the day. How can you check up on it?

The Old Way

You fire up your laptop, log in, wait for everything to load, attach your 3G/4G wireless card in the USB port, and wait for the card to connect to the data service you subscribe to. Then, you open a web browser and access the company's website, and six steps later, you find the ticket in question. But your five minutes are up. Either you miss your boarding call to get the status of the trouble ticket, or you forget about the trouble ticket to get on the plane. And either way, you lose.

The New Way

You enter your passcode to unlock your smartphone, click on the company's app, and select the option to view the status of an open ticket. If you need to speak to an agent, you escalate to a call back. You're in the moment, and you make your boarding call in plenty of time.

The collision of mobility, cloud and other developments is forever changing service delivery. It's changing our world… and it's awesome.

See how Interaction Mobilizer from Interactive Intelligence lets you offer a better mobile customer experience, in the moment. Watch the video at www.inin.com/Product Solutions | Interaction Mobilizer.

Jason Alley is solutions marketing manager at Interactive Intelligence.

by Peter Radizeski, RAD-INFO, Inc.

The **Special** Sauce

There is no special sauce in telecom. Everyone has the same technology. Last year, there were fewer companies pushing hosted PBX. Today, in my market, hosted PBX is like the new Integrated T1 – everyone is offering it.

What do you do if everyone is selling cheeseburgers like you? You could invent the Big Mac. The problem there is that you think it is about the technology. It's not. It is all about CX.

CX stands for Customer eXperience. In software development, if the websites and applications are user friendly, that's due to UX – user experience. Very few companies take UX into account – just look at Facebook. It's not just about design or aesthetics; it is about ease of use.

Telecom is more like cars. There are so many cars for sale – new, used, hybrid and crossovers. All cars will provide basic transportation. Three big factors are budget, worldview and luxury.

When all else fails, the buyer just goes with his budget. He "saves some money," the telecom mantra since the 1990's. The buyer can't tell the difference, so relies on price to decide.

The buyer has a worldview of the car he should be driving. The vehicle is part of the image he has about himself. In telecom, that worldview could be what prevents a buyer from going into the cloud. His worldview is based on blinking lights on-premise.

The other factor is luxury. Luxury is a concierge at a hotel; a suite, not just a room; black tie optional; white glove; and exclusive. Luxury is about the user experience. Luxury isn't about price, although it usually costs more, because the value demands it.

In today's world of "me-too" telecom (and overall awful customer service), the customer experience will be the differentiator. In a world of social media, word-of-mouth and online user reviews (like Yelp and Angie's List), a luxury customer experience will go a long way. CX is the special sauce.

Peter Radizeski is a telecom consultant and the owner of RAD-INFO, Inc.

flexible

by Troy Angrignon, Cloudscaling

Open Cloud Comes to the Enterprise

Enterprise CIOs we talk to are beginning to realize that the private cloud they built to consolidate servers and run legacy applications is not the only cloud they need.

The new cloud they're looking to build is specifically architected to run new applications designed to leverage the unique capabilities and economics of elastic infrastructure clouds like Amazon Web Services (AWS).

Architecting applications for Amazon-style infrastructure is part of the emerging "DevOps" application development culture. DevOps has moved beyond the realm of Internet-based, software-as-a-service (SaaS) companies like Salesforce and Facebook. Enterprises are beginning to appreciate the business agility, flexibility and economics DevOps makes possible.

Just how real is the shift to DevOps and cloud-ready applications? Consider the rapid rise of AWS.

According to data from GigaOM, Deepfield Networks and UBS, revenues at AWS are doubling annually and could top $2 billion this year. One-third of all Internet users hit AWS-based services at least daily. The service now runs on more than 450,000 physical servers. It's the fourth largest CDN (behind Akamai, Limelight and Level3). AWS consumes more than 1.7 million IP addresses, and its S3 service houses more than 900 billion objects.

Just how real is the shift to DevOps and cloud-ready applications? Consider the rapid rise of AWS.

Evidence like this underscores why CIOs are looking for a private cloud that is built to support cloud-ready applications like those Amazon caters to. CIOs want the flexibility to run these applications in a public cloud environment when it makes sense, but they also want to move them to a private cloud environment when security, regulatory compliance, governance controls, network latency and cost become issues.

Open cloud infrastructure is a proven way to support cloud-ready applications in your datacenter. The options for deploying a public cloud-style infrastructure in your datacenter are, regrettably, limited:

1. Hire the team that built your current private cloud. Enterprises know how to work with them. Unfortunately, they have no experience building this new kind of cloud.

2. Build on an early open cloud platform. Some of these solutions require you to buy proprietary hardware appliances to get performance that approaches public clouds. And, being handcuffed to one vendor defeats the whole idea of open cloud.

3. Build your own with OpenStack. The fastest-growing project in open source history is sometimes called the "Linux of cloud" and enjoys the backing of some big names. (Disclosure: Cloudscaling builds with OpenStack software.) But OpenStack by itself is, like Linux, great kernel technology that needs a more complete system around it.

4. Hire an OpenStack startup. A variant of the previous option is to hire one of the OpenStack startups to build a custom, one-off OpenStack cloud for you. Of course, you're then solely responsible for maintaining and upgrading it. Make sure that both the APIs and the underlying architecture they offer are compatible with the public cloud you might want to use for reserve capacity, so you can reliably move workloads and data back and forth.

If you're going to build a cloud to support cloud-ready applications in your enterprise, make sure you get satisfactory answers to these questions:

- Will I get faster time to market and iteration cycles for apps supporting new business initiatives?
- Does it give me greater agility and simplified scaling, compared to my enterprise/legacy cloud?
- Are capital and operating costs substantially lower than public cloud?
- Will it give me the security and performance visibility I need?
- Is it supported by a team that will vet new open source software releases for compatibility and reliability?

There are several approaches, and each is tailored to different enterprise needs. Get educated, and get started.

Troy Angrignon is vice president of sales and partnering at Cloudscaling.

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by Josh Restivo, Hexagrid

DR. Cloud: Rx for Recovery

Getting critical data replicated in near real-time to a cloud-based Disaster Recovery (DR) site is all fun and games. Conversely, creating an environment whereby said data can be rapidly deployed in a functional live state is all games and no fun. Here, we highlight a few of the problems that you're guaranteed to encounter.

Network

If your DR systems are all internal to your organization, network concerns may be limited. If employees will be working from an alternate location, a secondary VPN server located at the DR site may be all that's necessary to regain productivity. The primary point of contention for non-public deployments is the occasional vendor or business partner who restricts access based upon IP address. This method of access control is a bit dated but surprisingly common. In this case, failover to a DR site designed with different public IP addressing will incur a mad scramble for vendor contact details. In this case, you'd better hope that your failover has occurred on a weekday between 9 a.m. and 5 p.m.

Any servers requiring inbound connections from the Internet present a problem. There are multiple potential solutions but the right one depends on a number of variables. The most common approaches include:

BGP – If you control your own netblock(s) you can advertise them through divergent ISPs and weight the backup site routes appropriately. This is usually the most ideal solution from a technical perspective, though some organizations may not have the resources to configure and maintain a BGP implementation.

DNS – It is possible to configure DNS zone timeouts to be cached for only a few minutes. With this, the DNS administrator has the ability to affect hostname changes rather quickly. There are, however, a few significant downsides to the DNS approach. Hostname record maintenance (creating/updating records for each site) and possible zone "flapping" or transience due to the low timeouts are just a couple.

NAT – In cases where publicly-addressed systems cannot be brought back online at the DR site using BGP or DNS, it may be necessary to employ NAT. Keep in mind that is not necessary for systems to be addressed with RFC1918 "private" IP space. It is perfectly acceptable, in the context of a DR scenario, to keep existing public IPs (from the primary site) in place and configure the network interior accordingly. NAT or PAT can then be used to map the DR site's public IPs with the original "internal" IPs.

Licensing

Have any software or hardware licenses linked to IP addresses or CPU serial numbers? Be prepared to get bit if you don't spend some time thinking this one through.

System Access

Getting firewall and administrative policies correct for the DR site is relatively straightforward so long as you remember where all of those policies live. One critical point of concern arises when both the primary and DR sites are using identical IP space. When the primary site recovers, will you have difficulty accessing the DR site's "shadow" system to recover updated data if you're accessing it via VPN or private line? Since DR systems typically exist in a "down" state until a recovery operation is manually initiated, this hurdle is commonly and easily overlooked.

Failback

While architecting your DR solution, don't forget that the door swings both ways. No one (at this point) expects automated failback procedures and everyone is willing, perhaps too much so, to accept a degree of manual reconstitution of data at the primary site. Don't succumb to the "we'll cross that bridge when we reach it" mentality. When you're ready to switch back to your primary facility, your team's technical abilities, patience and sleep schedules have likely been pushed to their limits. You won't want to delay failback as your problems will assuredly increase as a function of time. At this point, you also don't want a stressed team resolving complex problems concerning your organization's critical resources. Procedures for synchronizing databases are best devised without flames licking at your feet.

> Take time, while you have it, to think through all scenarios that your organization is likely to encounter in the event of DR site deployment.

Take time, while you have it, to think through all scenarios that your organization is likely to encounter in the event of DR site deployment. Consider bringing in an experienced professional services organization to help your team address potential challenges and implement a solid DR strategy. Flexible network design and general system maneuverability make cloud a great foundation for DR sites, but keep in mind that even with all of cloud's wonders, fundamental Newtonian principles still apply.

Josh Restivo is senior cloud integration specialist at Hexagrid.

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Is UC in the Cloud Right for You?

Unified communications (UC) has opened up a new world of productivity for today's businesses. With all the different ways we have to share information now – voice, video, web collaboration – managing all these tools within a single interface is critical for efficiency and speed. But there are several options for deployment. On-premise technology implementations have always been the norm, but now we can also choose to build a private cloud, utilize a public cloud service, or even create a hybrid cloud.

With all these choices, how do you know what deployment model will work best for you? The following questions can point you in the right direction:

1. How much ownership and control do you need over your UC deployment? How comfortable are you allowing other businesses to manage your communications? If you don't mind relinquishing control, a public cloud may be a great way to get the service you need. But if control is an issue, or you have strict regulatory requirements, you might opt for an on-premise or private cloud solution.

2. What kind of capital investment can you commit to your communications system? When it comes to cost, an on-premise system will require the greatest initial investment, whereas public cloud deployments are generally billed on a regular cycle without any significant initial outlay of capital.

3. How much in-house technical skill do you have? For businesses with significant internal IT resources, implementing a private cloud-based UC solution may be the ideal strategy. Those with minimal expertise or few staff may find it more cost-effective to allow an outside vendor to manage the system via public cloud.

4. What are your needs in terms of scale and diversity? The number of sites using the system, and the variety of users and communications configurations needed, can help determine whether an in-house UC system will be sufficient. If you have several sites that need service, and a large number of differing configurations to maintain, a cloud system may be better. For a single site with little variation in the needs of users, an on-premise could be the best.

Answering these questions will help you choose the ideal UC deployment scenario for your business. Let's explore some other advantages and disadvantages to consider with each of the deployment models:

On-premise deployment: This option gives the greatest opportunity to manage the hardware and software. There is also a perception that security is the best with an on-premise system, but there can be flaws in a PBX system that can be exploited as you modify the code. Regardless, it's important to conduct a thorough evaluation of security options for whatever model you choose. You should also consider the length of contract with vendors, and upgrade cycles. And maintenance costs as a part of regular IT duties are often overlooked and may increase total costs.

Public cloud: A public cloud offers the advantage of fast deployment, with no need to test the integration of new hardware and software within the existing IT environment. Contracts are also typically shorter, and regular upgrades are incorporated as a part of the service. It's important, however, to establish an SLA that will provide you with your required level of service and adequate security. Certain features are also more cost-effective when rented from a cloud provider rather than being purchased, such as if only a few employees need video conferencing capabilities.

Private cloud: This provides some of the benefits of the cloud with the responsibilities of ownership. While you have control over the infrastructure, you will need to keep up with the latest vendor releases, which will require some IT resources.

Hybrid cloud: For some organizations, a hybrid cloud will best suit their needs. In this case, the cloud would essentially operate in layers. The inner layers would be more confidential operational core applications, while the outer layers would contain the applications that need to be accessed from outside the corporate network through the public cloud, such as sales or email. This provides a balance between security and flexibility.

There's a great variety of deployments available as you consider the best way to implement your UC system. Before committing to a specific on-premise or cloud system, take the time to carefully evaluate your needs and weigh the advantages of each model. One additional consideration is that as you evaluate vendors, be sure to find one that uses the same technology for on-premise and cloud solutions, which will allow you to modify your deployment later, if necessary. By making the correct decision for your business, you will be able to benefit immediately from all that unified communications has to offer, and improve employee productivity.

Martin Northend is marketing director, OpenScape Cloud Services, at Siemens Enterprise Communications.

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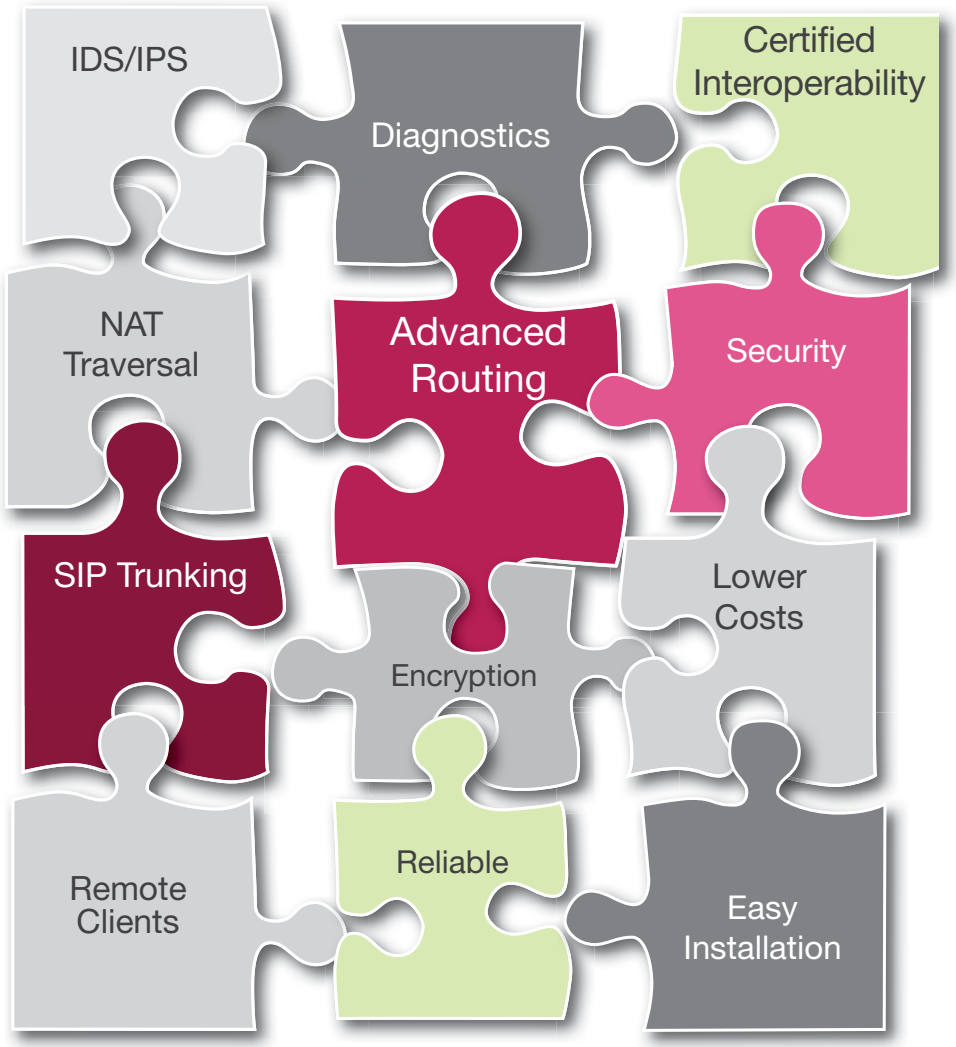

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BRINGING IT ALL TOGETHER

by Elad Yoran, Vaultive

Compliance-Ready Cloud Security for the Enterprise

The regulatory pressure being placed on enterprises today is unprecedented. Factors including globalization, the advancement of technology and large-scale failure of controls have driven data security and the manner in which data is shared, transported and retained, to become an integral component of governance.

Given the many regulations and standards that enterprises must consider, how can enterprises leverage the economy and efficiency of cloud computing while maintaining the data security, control and compliance advantages of on-premise computing? With regulations imposing a number of limitations, can organizations that are required to uphold these regulations still benefit from the cloud?

Key Challenges

Data Security and Protection: The cloud introduces a broad range of security threats, including the possibility of the cloud provider being hacked, the potential for malicious actions by a rogue employee of the cloud provider and intermingling of data in a compromised multi-tenant environment.

Regulatory Compliance: Enterprises are subject to an array of regulatory requirements including federal laws such as SOX, varying state data protection measures, The Patriot Act, international laws like the EU Data Protection Directive, and industry-specific regulations (HIPAA, GLBA and PCI DSS). There are also a number of good practices and standards (COSO, COBIT, NIST, ISO, CCM) that enterprises adhere to in order to best protect data.

Data Residency: Businesses that have an international presence are faced with the daunting task of complying with the multitude of growing privacy and data residency regulations. To comply, enterprises often pay cloud providers a premium to add costly infrastructure in each jurisdiction. Furthermore, most providers are unwilling to duplicate infrastructure in all jurisdictions, making it difficult for customers to comply.

Unauthorized Data Disclosure: In the U.S., personal information is protected under the Fourth Amendment; however once it is shared, it is no longer protected. Until legal guidelines are established to address the application of the Fourth Amendment in cloud computing, uploaded data is not considered private. Cloud providers must comply with subpoenas and other requests by the government to turn over customers' data, including data subject to attorney-client privilege. Often, cloud providers notify customers that data was turned over to the government after the fact, if at all.

Smart Encryption Technology Addresses the Concerns

Encryption of data-in-transit and data-at-rest has long been recognized as a best practice. However, these two states of encryption are no longer sufficient, as they do not protect data while it is being processed in the cloud. As usage of cloud applications has evolved, so must the standards and best practices that are applied. Adding an additional state of encryption – encryption of data-in-use – enables data to be dynamically processed by providers while remaining in its encrypted form. This empowers the enterprise to retain full control during the entire process, including when the data is out of its network and in the cloud.

Encryption of data occurs before it goes to the cloud provider. Cloud data encryption companies can generate cryptographic data to complement industry standard 256-bit encryption, which preserves certain characteristics of the data so it can be searched, sorted, indexed, and otherwise processed without ever being decrypted while at the provider. If a malicious actor obtains access to the data, they will only see encrypted text. Similarly, in the case of data intermingling in a multi-tenant environment, the other organization will always only see cipher text. The enterprise maintains control of the encryption appliance and the encryption keys to assure that data cannot be decrypted by anyone else.

Smart encryption can also be deployed in geographically distributed environments. Organizations with multiple data residency requirements can deploy and maintain an instance of the encryption appliance in each jurisdiction. Once the data is encrypted with keys that are maintained in that jurisdiction, the encrypted data can lawfully reside in any location. The paradigm shifts from requiring the data to remain locally to requiring the encryption keys to remain locally.

Encryption also protects enterprise data from unauthorized access by a third party or the cloud provider, while enabling disclosure requests to be managed independently by the enterprise –without placing the cloud provider in the position of disclosing customer data. The cloud provider will turn over customer data when presented with a subpoena or other government request. However, with the application of advanced encryption, all data was encrypted before the cloud provider received it and they cannot decrypt that data. Therefore, when complying with an order, the cloud provider can only turn over cipher text. If the government wants to decrypt the data it must go to the organization that owns the data, just as it does today.

Elad Yoran is the CEO of cloud data encryption company Vaultive.

by Dave Meizlik, Dome9

Securing Servers in the Cloud

By now everyone knows that security is the number one concern among enterprises considering moving to the cloud, inhibiting cloud adoption. But lesser known is what to do to mitigate some of the security risks and concerns. Today there are more than 30 million cloud and virtual private servers in use, and most are vulnerable to attack.

One of the greatest threats to cloud servers is unsecured access. Developers and administrators leave ports such as RDP and SSH open so they can connect to and manage their machines. But this practice leaves these and other service ports open to attack from hackers. As an example, the recent Morto Worm exploited a significant Windows RDP vulnerability.

Many administrators don't think about this and other cloud server access issues. In fact, in a recent survey by the Ponemon Institute, more than half of those surveyed said have no knowledge of the risks. Perhaps worse yet, 42 percent said they wouldn't know if their cloud server was hacked because of an open port.

What's more, there's confusion as to who is responsible for securing cloud servers. In this Ponemon study, respondents were split in their opinion about who was responsible – the provider, the consumer, or both. Finally, traditional, on-premise security fails to cover the cloud; and security provided by cloud service providers is limited, cumbersome to use, and isolated to each provider's cloud.

Security in the cloud needs to be as elastic as the cloud – if it's not scalable and manageable then it's not going to be effective. Without efficient and effective management, security controls are often misapplied, leading to high complexity and cost and/or vulnerable infrastructure, or just flatly ignored. And the front-line defense, the cloud server firewall, is neither scalable nor manageable for most cloud users and service providers, leaving their cloud servers vulnerable to attack.

The following recommended steps to securing servers in the cloud will help IT practitioners reduce their overall risk, and improve the security of their organization's data in the cloud:

1. Close Service Ports by Default

Instead of leaving ports such as RDP, SSH or phpMyAdmin open and vulnerable to attack, close them by default and open them only when, for whom, and as long as is needed. When your service ports are closed, your server is virtually invisible to hackers since the server does not respond to an attacker's ports scans or exploits.

2. Make Your Security as Elastic as Your Cloud

As you re-architect your infrastructure, take the opportunity to re-architect your security too, keeping in mind that you need to be able to scale security instantaneously (for all those micro-perimeters) as your infrastructure scales, without adding management overhead.

3. Take Ownership of Your Security

The jury's out as to who's responsible for cloud security. Take ownership of your security. Thinking your provider will handle it for you is an assumption you don't want to make. Cloud hosting providers and vendors provide an abundance of controls and tools, but how you secure your servers is up to you.

4. Abstract Security from the Infrastructure

Nowadays you don't use a single consume computing resource; it's often dispersed across multiple accounts, regions, and even providers. When you abstract your security from the infrastructure, you can centralize your policy management and controls regardless of where and how the computing is consumed. This gives you the ability to support a wide array of cloud computing environments, streamline management, and all without any additional risk.

5. Raise Awareness and Support Innovation

Your employees and those across the enterprise are going to consume computing resource without your knowledge. If you embrace this they're more apt to let you know and to listen to your suggestions for how to secure it. As a carry over to the last point, if you embrace a heterogeneous computing infrastructure but abstract security controls, you can maintain a very capable set of controls.

6. Get Help

Look to tools like encryption, malware protection and firewalling to help secure your cloud. As you do, however, be sure they include automation and super simple management so you can scale efficiently.

Making your cloud servers impenetrable is a must-do for every IT administrator working to migrate applications and other critical data to the cloud. As new technologies continue to emerge offering scalable, reliable, elastic and flexible functionality, security for the cloud will happen sooner rather than later. Taking these precautions now will set you on the right path.

Dave Meizlik is vice president of marketing and business development at Dome9.

by Juliana Kenny, TMCnet

Is 'The Cloud' a Misnomer?

Dear Service Providers,

Consider this question: What do you mean when you say "cloud-based?" Do you mean your solution lives in the ether, accessible to all who pay for it with no vestiges of the old legacy systems? Or have you simply rebranded your existing legacy-based systems into sexy, virtual-looking offerings?

Now, consider this statement: No matter how "virtual" you think your new solution is, it's still rooted in a bunch of wires and needs a hardware-based system to back it up.

Sincerely,

The Cloud Skeptics

There are some who stand by the school of thought that there is actually nothing that "cloudy" about a cloud-based system – that our perceptions of the cloud are actually misperceptions because no matter how "virtual" something is, it must still have a system of backup, which must still be rooted in hardware.

So how virtual is this "virtual environment" in which we participate and house our data? Do we dupe ourselves into thinking that this "cloud" is the be-all and end-all of virtual technology? Right now the answer looks, well… cloudy.

I spoke with the Senior Director of Technology for the GSMA, Dan Warren, who is a proponent of this theory that the cloud isn't really a cloud, rather it has become the "rebranding" of existing systems.

The general public views the cloud as this ethereal depository that it can "put things into" and "get things out of" whenever it wants. Warren indicates that, as a technologist, no one will ever be able to convince him that such a depository exists without it including a concrete place in which to back up files. Technologists see what's "going into the cloud" as a finite amount of data they need to store and requiring a certain amount of capacity that they need to have backed up.

This argument makes sense, but that concrete place needs concrete servers and storage, which means hardware. So really, this virtual depository is just as hardware-based as all systems have been since the dawn of the technology age. It's just got a new fancy name now.

Warren says he "calls people out" when they describe a service that has been "around for forever" which has now been moved to the cloud. For example, he spoke to one vendor who offered a DNS service. This vendor told Warren that his company was going to do "DNS in the cloud." Warren asked him, "Where was DNS before then if it wasn't in the cloud?" To which this particular vendor had no response. So it seems as though the eagerness to jump on The Cloud Train preempts the understanding of what the cloud means, how virtual it is and where its base in technology lies.

"It's only really cloud if the amount of resource which is available means you have no limit on scale. Any time you are putting something into a single-operator environment, then there generally is a limit on scale," says Warren.

So how "virtual" can any service be when it must necessarily be rooted in hardware and require concrete storage?

Jamie Brenzel, CEO of KineticD, had a few words to say on this subject. As the head of a company that focuses on the idea that online back-up is the best way to back up every device, he is immersed in the physical vs. virtual.

Brenzel said his company provides solutions for virtual and physical environments, and that the combination of hardware and software solutions to get to "the core of the cloud" is the most interesting dilemma of late.

"Right now, it's the combination of the two: Hardware costs have come down 20 percent a year. As our infrastructure grows, because we're ordering things on a volume basis, our costs have come down," reveals Brenzel. "Beyond that, hardware and bandwidth costs are coming down. I don't see that as a trend that will change. So what does that mean for back-up providers? It benefits us in terms of delivering our services."

The bottom-line changes in costs have a direct effect on KineticD's ability to provide a better, more cost-effective virtual storage service to its customers.

Brenzel witnesses most companies exploring cloud-based options choosing hybrid solutions. Enterprises are taking on a "you jump, I jump" mentality. They are reluctant to move their legacy-based systems to cloud-based ones because they are uncertain as to how to resolve security concerns and continuity issues.

But this dilemma for the enterprise brings us back to the first question: If cloud-based systems are still just based in hardware, what's to worry about? Why even call it "cloud?"

"What we're really talking about is the ongoing trend of separation between hardware and software," reiterates Warren.

This "trend" manifests itself in this paradoxical environment that looks like a cloud, acts like a cloud, but really isn't a cloud – at least not to some.

Juliana Kenny is managing editor of TMCnet.

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by Erin E. Harrison

Monetizing SaaS: Survival of the Fittest

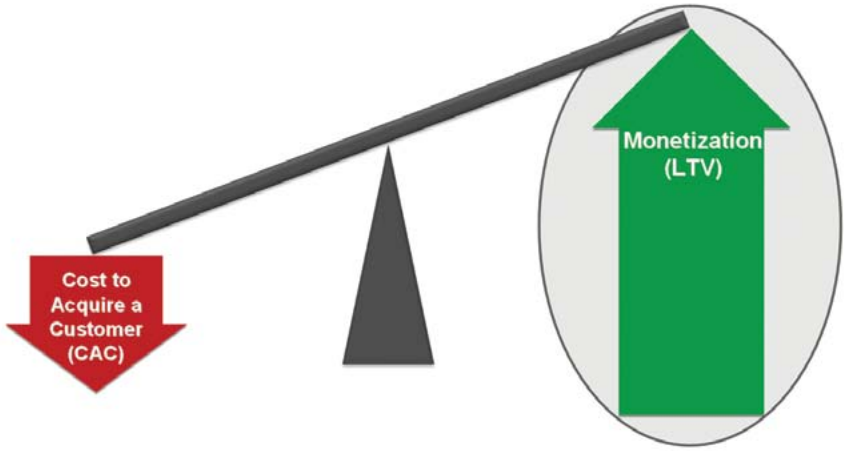
With worldwide software-as-a-service (SaaS) revenue forecast to reach $14.5 billion this year, there is no doubt that the cloud phenomenon is reaching a critical mass. Just take a look at the latest industry news and it's impossible to miss headlines about the latest SaaS companies that are taking their product public. Investment firms are pouring millions of dollars into this growing segment because of the promise it holds, yet only the strong will survive.

According to Gartner, this year's SaaS revenues are a 17.9 percent increase from 2011 revenue of $12.3 billion. In fact, SaaS-based delivery is predicted to experience healthy growth through 2015, when worldwide revenue is projected to reach $22.1 billion, according to Sharon Mertz, research director at Gartner.

"After more than a decade of use, adoption of SaaS continues to grow and evolve regionally within the enterprise application markets," says Mertz. "Increasing familiarity with the SaaS model, continued oversight on IT budgets, the growth of platform as a service (PaaS) developer communities and interest in cloud computing are now driving adoption forward."

However, as early adopters of SaaS have realized, it is not easy to find the right catalog segmentation, feature bundling and pricing models. In fact, the number one question SaaS vendors ask once they are in the cloud is: "How do we optimize?"

A balanced cloud business model focuses on two components: minimizing CAC (the cost of acquiring a customer) and maximizing LTV (the lifetime value of a customer), according to Michelle Nerlinger, director of product marketing for SafeNet's software rights management (SRM) division. In fact, she says the right licensing and entitlement management system fuels the entire SaaS optimization process.



Source – David Skok, Matrix Partners

"A complete software monetization solution – featuring both licensing and entitlement management components – is critical both in the launch and optimization phases of any cloud service," Nerlinger explains.

Software monetization means the adoption of any variety of measures a software company takes in order to increase the profitability of their intellectual property, according to SafeNet, which offers software monetization services for small and medium-sized businesses (SMBs) up to large enterprises.

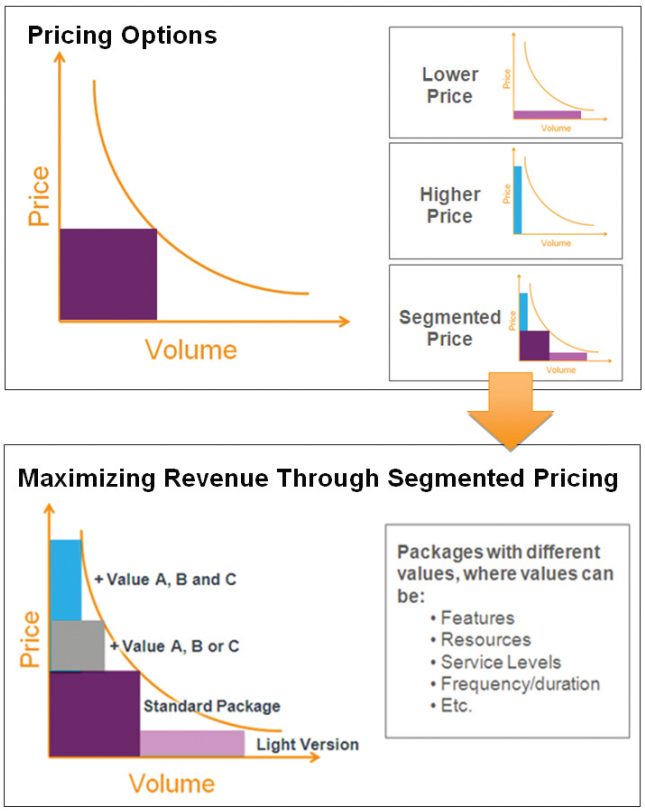
Delivering software as a service can open up new markets for software companies and help sell into existing ones, Nerlinger explains. But in order to maximize the value vendors derive from their software offering, their strategy needs to take into consideration each aspect of software monetization – packaging, control, management and monitoring.

According to Nerlinger, there are three core challenges that software publishers have with regard to software monetization in the cloud:

1. Service agreement compliance tracking and enforcement;
2. Flexible packaging abilities; and
3. The ability to easily track and report on product and feature usage.

Control

One of the biggest considerations about cloud is the issue of control and visibility – not only for the end user, but also for the vendor offering a cloud-based service.



Source – SafeNet, Inc. 2012

"When people think of the cloud, they think the concept of license enforcement does not exist. That is actually not the case; the concept just evolves a bit. The concept of control in the cloud really means 'how do I control user authorization to my service and the features within it,'" explains Nerlinger. "Let's for a second imagine that you have a service offering with 10 distinct features. In order to make the offering affordable to a few customers you sold them rights to access a basic version of the service, which in the service agreement only includes access to features one, two, three and four. Once those users are logged into the service, without licensing, what keeps those users from accessing and using features five, six, seven, eight, nine or 10. Nothing."

Another example, she adds: If you decide to offer a customer pricing based on feature executions – what is stopping your customer from using more executions than they purchased?

"A pricing model for an accounting application could be that the charge users pays in advance for an agreed number of 'calculations.' In this instance, let's say the user purchased 100 calculations. What is keeping that user from performing 150 calculations? Without licensing, nothing. Another example of revenue leakage," Nerlinger says.

Avoiding this conflict means implementing a proven software licensing solution that will allow software vendors to control user authorization at the feature level so they know that all usage is conducted by paying customers and that they are never consuming more than they have paid for, she adds.

Packaging

For both customers and providers, the benefit of a SaaS model is that it allows for an offering that fits customers' needs. However, contrary to popular belief, software packaging is not a one-time event and despite the hopes of product managers around the world, "one size" is never going to "fit all."

"You can have the most sophisticated, feature-rich offering on the market, but if you can't offer flexible pricing and licensing models you will never reach your maximum potential," says Nerlinger. "And just when you thought the work was done, you are going to need the ability to change all of your pricing and packaging schemes on the fly to satisfy the constantly evolving demands of enterprise and consumer end-users alike."

So what does it take to be successful in the world of software packaging? According to Nerlinger, the following three components make up the foundation of a successful SaaS vendor:

1. Product versatility – What the customer wants to pay for.
2. License model flexibility – How customers want to pay for it.
3. Business model agility – The ability to adapt to new customer requirements on the fly.

"Software licensing and entitlement management enables you to separate your engineering processes and your business processes so you can build product- and feature- level bundles, associate any variety of licensing schemes, individual features or products, and change both your bundling and licensing schemes on the fly, anytime without ever needing to involve engineering," adds Nerlinger.

Tracking

The ability to effectively track and easily report on what end-users are: a) entitled to, and b) what they have consumed – when, and to what extent – is the last, but certainly not least, major challenge when it comes to achieving success in cloud software monetization, Nerlinger explains.

Source – SafeNet, Inc. 2012

"Product and feature usage monitoring provides the business insight required to report on license agreement compliance, optimize product roadmap investment, and drive future packaging strategies. Insight into how products are being used is key to effective product line management," she says. "Armed with a full understanding of which features are being used and to what extent provides product managers with an easy way to identify which features they should be investing in, and equally as important, where to disinvest."

This knowledge can also help with overall use-case prioritization and investment mapping.

"Having an understanding of the various ways that customers use your products helps you make smarter packaging decisions," Nerlinger says. "Determining which features to package into a baseline product and which features can be sold as added value allows product management and marketing to more appropriately reach customers who want a low investment in the software all the way up to the larger deployments that want full access at a much grander scale."

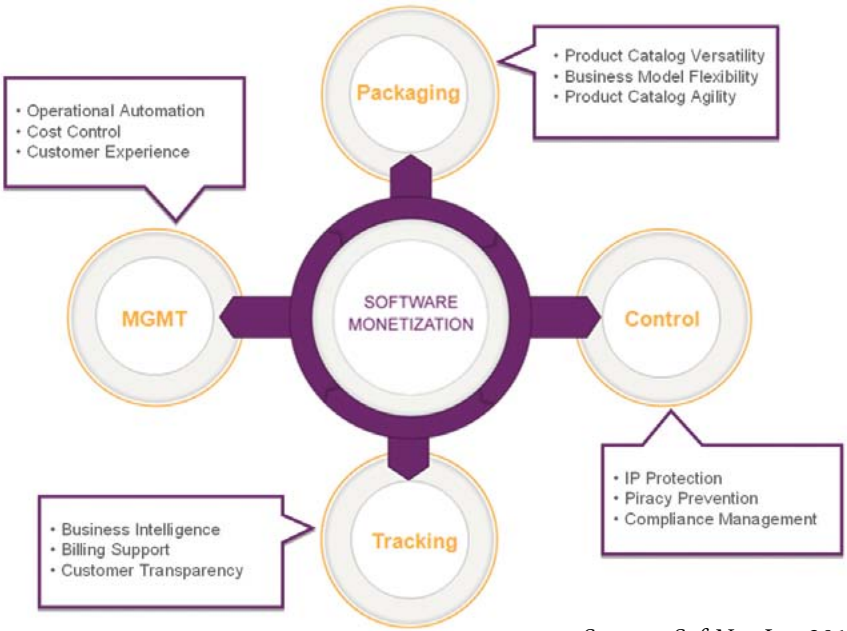
Licensing and Management

A properly deployed licensing and entitlement management system will automatically track all product usage right down to the feature level and provide you not only with customizable ways to report on this data, she says, but will easily integrate into other back office systems that require this data to operate including but not limited to billing, ERP (enterprise resource planning), CRM (customer relationship management) and marketing automation systems.

"In the launch phase, it is critical to have an efficient way to provision, track, and control use of your service. You must be able to control authorization to prevent overuse or misuse and protect revenue. You must be able to easily provision, track, and report on usage to ensure a positive customer experience, enable business processes such as billing, and to have the data necessary to begin thinking about how to grow/change your business models. All of these things are core to software licensing and management," explains Nerlinger. "And software licensing and management becomes even more critical over time as you look into how to diversify and grow your business."

The features of a software monetization solution control authorization to features and services, enable product versatility, provide flexible licensing models, track detailed product and feature usage data, and allow for organizational agility by separating engineering and business processes. Together, these features can be leveraged to optimize any SaaS business by following five steps:

- Step 1 - Track all product and feature usage as granularly as possible.
- Step 2 - Evaluate that data on an ongoing basis to identify patterns (i.e., what is being used, what is not being used, what is used most, what time of day are services being used, etc.)



Source – SafeNet, Inc. 2012

Michelle Nerlinger, director of product marketing for SafeNet's software rights management (SRM) division

- Step 3 - Take that information and make decisions on how to segment your market into groups with similar usage/spending patterns.
- Step 4 - Take the information you know about how the segment gets values from your offering and test out new business models that provide the highest value to the customer and provide the most revenue for you.
- Step 5 – Rinse and repeat.

However, it's important to note: "All of these steps above are either impossible or incredibly manual, time-consuming and prone to human error without the proper licensing and entitlement management tools in place," warns Nerlinger.

Experimentation and Implementation

SafeNet's family of Sentinel Software Monetization solutions include Sentinel HASP, Sentinel EMS, Sentinel RMS, and Sentinel Cloud, are designed to allow software vendors to grow their business as well as work seamlessly with outside products. In addition, SafeNet's Sentinel Professional Services team of software licensing and entitlement management experts is available to guide organizations through the setup and implementation process.

SafeNet also hosts an annual LicensingLive! event, which is a collection of online and in-person resources that give software publishers direct access to industry analysts, licensing and monetization consultants, peer organizations and solution providers to obtain the latest tips, tricks and best practices around software monetization.

"The software industry is fast-paced, competitive, and evolving. End-users are demanding convenient access to their business and personal applications – anywhere, anytime, and from any device. Software publishers are shifting gears to provide maximum flexibility and reinvent their approach to software monetization," Nerlinger says.

The next LicensingLive! event will be held Oct. 2-3, 2012 in Cupertino, Calif. The licensing events are generally attended by leading names in the software industry and in the past have featured presentations by industry experts such as IDC's Amy Konary and Saugatuck's Bruce Guptill, as well as leaders from Cisco, Brocade, Micro Focus, Akamai, Dell Boomi, among others.

"In today's competitive market, an effective software monetization strategy directly depends on how effectively a software publisher is able to package, control, track, and manage their offerings," Nerlinger concludes. "Getting it right is hard work. It takes time, experimentation, and the implementation of clean, flexible software licensing and entitlement management systems."

To register for SafeNet's next LicensingLive! event, go to www.licensinglive.com.

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Feature STORY

by Erin E. Harrison

Cloud Balancing: Don't Put All Your Apps in One Basket

As more organizations shift toward moving their technologies into the cloud, perfecting the balance of where applications reside is paramount to performance and, most certainly, avoiding potential outages. You most likely remember when Amazon Web Services was hit last year with a multi-day service outage on the East Coast after a "misaligned network" brought down several EC2 services in its Northern Virginia data center. Cloud balancing acts as an insurance policy against such outages. In plainer terms, it's the notion of "don't put your eggs in one basket"– or in this case, don't put all your applications in one cloud.

Cloud balancing, which is the routing of application requests across applications or workloads that reside in multiple clouds, can also allow organizations with smaller budgets and/or IT staff to benefit from the upside of global application delivery, according to F5's Lori MacVittie, senior technical marketing manager.

"Most people would say it's load balancing across a cloud, or two clouds and a data center," MacVittie recently explained in an interview with *Cloud Computing*. A number of metrics are involved in cloud balancing with "the focus shifting from organization size to the user community in order to deliver applications as quickly as possible."

But cloud balancing is not simply load balancing across clouds. In fact, CIOs and IT managers need to stop thinking of cloud as an autonomous system and start treating it as part of a global application delivery architecture, she says.

Cloud balancing uses a global application delivery solution to determine, on a per user/customer basis, the best location from where to deliver an application. The decision-making process, MacVittie says, should include traditional global server load balancing parameters such as:

- Application response time;
- Location of the user;
- Availability of the application at a given implementation location;
- Time of day; and
- Current and total capacity of the data center/cloud computing environment in which an application is deployed.

Context is Critical

When IT managers start to look at cloud balancing from a technical and business standpoint, the considerations are somewhat intuitive but the decision-making process must involve the full user community – it's a vital aspect that will ultimately help define the strategy. Context, MacVittie says, is critical.

A misstep MacVittie sees all too often is lack of consideration for the user base, which is critical to proper cloud balance. Evaluating the user community is becoming an increasing concern among small to medium-sized businesses (SMBs), which have to look at their traffic more from an external view.

"Size does matter. It's about the user base as opposed to the business size; a small company can have enormous traffic that they have to handle. That's going to be a switch for organizations in general," MacVittie says. "Most successful start-ups have less than 40 people but they have millions of users. We have to shift that to look at the user community that they're serving as opposed to the employee side."

Balancing vs. Bursting

Although they may appear similar, cloud balancing and cloud bursting are not interchangeable terms. In a cloud balancing scenario, an organization with an application running in the cloud has to look at putting multiple regions within one cloud provider or distribute it to multiples cloud providers.

Whereas, "cloud bursting is a capability where companies have an internal data center and are able to more dynamically provision their application out into the cloud," according to Josh Odom, platform product line leader at Rackspace.

In fact, many large enterprises have invested enough into their own internal infrastructure, that the most logical scenario is a hybrid model deployment where they can leverage the best of both worlds.

"Many organizations already have a substantial investment in their own internal IT infrastructure. With cloud bursting, businesses are taking advantage of it so they can withstand those peaks that they would have to purchase more infrastructure for," Odom explains. "Having that ability to burst out into the cloud allows them to experiment and understand what the cloud can do for them without investing in an all in strategy."

Cloud balancing – which is a form of hybrid cloud computing – involves one or more corporate data centers and one or more public cloud data centers.

"Cloud balancing is akin to very large organizations that need to have a distributed model in order to address performance and availability or need to address regulations," MacVittie says.

On the other hand, the business case for cloud bursting primarily revolves around seasonal or event-based peaks of traffic that push infrastructure over its capacity but are not consistent enough to justify the cost of investing in additional hardware that would otherwise sit idle, she adds.

However, in either case, business use cases, metrics and goals must all be part of balancing the equation.

"In both cases the cloud-deployed application is still located at your 'address' – or should be – and you'll need to ensure that it looks to consumers of that application like it's just another component of your data center," MacVittie explains.

The good news is, businesses are becoming savvier when it comes to balancing across multiple clouds, Odom says.

"More organizations are getting serious about moving applications into the cloud but they are moving smaller applications. We are seeing more companies wanting to go all in or bring subsets of their applications to Rackspace," observes Odom.

Customers use Rackspace cloud load balancers for a variety of scenarios, but the two most common uses are the following:

Rapid Growth – In this scenario, a business is growing rapidly and needs more than a single cloud server. With cloud load balancers, traffic can be balanced across two or more cloud servers.

High Availability – Organizations running mission-critical business applications on the cloud need to be up 100 percent of the time. With cloud load balancers, customers can build a very robust high availability cloud configuration.

F5's Lori MacVittie, senior technical marketing manager

As companies consider cloud-based services, the issue of cloud balancing is an important tactic that will play a significant role in cloud deployments, opening up new possibilities for organizations with limited resources to benefit from cloud computing.

Cloud balancing still has a long way to go in terms of standards, but nevertheless, MacVittie concludes, cloud computing has introduced a cost-effective alternative to building out secondary – even tertiary data centers – as a means to improve application performance and ensure application availability.

Balancing Best Practices

Building out multiple data centers is an expensive, lengthy process and is difficult to do on demand since many organizations have turned to cloud. Here are some best practices to consider to ensure you don't put all your apps in one basket:

Consider user patterns: For seasonal spikes, a combination of burst/balance is the best approach. Look at where your users coming from. A sudden spike from all over the world or a tight user community? If you are looking at a broader distributed cloud balancing solution it should be based on where they are coming from. If a spike is related to a specific event, you want to control it locally, says Rackspace's Josh Odom.

Cloud bursting: The so-called bridge model is going to be one of your best bets based on the fact that you have the least amount of infrastructure change and most amount of control and don't have to change policies, according to F5's Lori MacVittie.

Feature STORY

by Erin E. Harrison

Cloud Redefines IT Outsourcing Requirements

While the cloud is simplifying some aspects of IT, it's making others that much more complicated, including outsourcing models and redefining the role of service providers. Amid all the hype surrounding cloud computing, it's still unknown to which the extent enterprises are planning for and adopting cloud computing as a replacement for traditional data center infrastructure technologies and management processes. But there has been enough traction among enterprises that IT outsourcing (ITO) is being transformed by the shift to cloud.

Automation and self-service cut out many of the middlemen that used to provide outsourcing solutions and provides opportunity to shorten time to solution, have more flexibility to change solutions quickly, and achieve economies, according to Gilad Parann-Nissany, founder and CEO of Porticor Cloud Security.

"At the same time, to keep trust and security tools are necessary that harness the power of cloud computing while leaving control in the hands of the customer. Customers universally want to outsource the complexity of a solution to the cloud, while keeping control and confidentiality of data to themselves," explains says Parann-Nissany. "New approaches are needed with the changing dynamics of cloud outsourcing."

> Customers universally want to outsource the complexity of a solution to the cloud, while keeping control and confidentiality of data to themselves.
>
> — Gilad Parann-Nissany, Porticor Cloud Security

As an example, a new breed of cloud-enabled solutions is emerging to enable this shift.

"We are seeing technology for managing cloud infrastructure at scale, such as automation APIs, management consoles, and operational scripting environments," Parann-Nissany continues. "Tools are emerging for controlling cloud costs and bidding for the most effective solution, such as cloud brokerage. Technology and best practices are emerging for controlling data and ensuring data confidentiality, such as split-key encryption or homomorphic key encryption."

As with previous IT revolutions, as the needed skill set changes, there is a need to get educated and trained. But since cloud is a revolution in operations and in management of trust, it is not about just technology skills, according to Parann-Nissany.

"The biggest challenge is in understanding how to keep trust only to yourself, yet enjoy the benefits of outsourcing. You should be looking for technologies and processes that make control easy," he explains. "For example, if you have correctly deployed a security solution, you should be controlling many data objects (files, disks, records) and many keys to these objects, through a handful of master keys that are easy to manage and secure. Such approaches involve both technology and new processes."

Within the enterprise, the cloud can enable IT teams to react more quickly to changing demands. However, the ability to support the cloud business model requires new roles within the IT organization, according to Colleen Smith, vice president, software as a service (SaaS), at Progress Software.

"The need for relationship management and service level management is increased and that is an area that has not been a key focus in IT organizations in the past," explains Smith.

As the vice president of SaaS, Smith is responsible for developing the company's SaaS/cloud strategy, marketing initiatives, and assisting the firm's application partners in the execution of their SaaS business in the cloud.

Smith says one of the biggest cloud challenges facing IT management is cost control.

"With easy access to cloud resources – often a simple registration and credit card are all that is required – managing costs and projects without the typical approval process can lead to some confusion and conflict," she told *Cloud Computing*. "Budgets can also become impacted due to the "unknown" nature of the expected costs associated with the on-demand nature of cloud resources. Visibility is also a key part of this because if the IT organization is not monitoring usage the 'spend can get way out of control."

The most critical question companies must answer is what to outsource and how to go about executing certain functions, according to Dan Klaussen, product manager of mobile, at software development company Three Pillar Global.

"It's easy to be allured by the benefits of the cloud, but sometimes those advantages are offset by the loss of control. For some functions, relinquishing that control has little or no impact, and the cloud offers pure upside," Klaussen explains.


Colleen Smith, Progress Software

"For business-critical functions, outsourcing to a third-party service provider requires the utmost analysis and care. The trick is finding service providers that deliver a full suite of capabilities, allowing enterprises to pick-and-choose the right combination of functions to outsource with varying operating modes."

While cloud is changing the dynamics of traditional outsourcing models, the flexibility of cloud is also giving rise to the cost-savings benefits companies can achieve.

"The beauty of the cloud is that flexibility comes in a number of flavors. Pricing can be volume-based or connection-based, for example. In addition to being able to pay by the drink, software solutions may be priced by functional component, enabling companies to use only those modules that are relevant to them," says Klaussen. "By opting for an outsourced approach, businesses can address all of their functional and volume requirements without having to invest in a full-blown on-premise or hosted solution."

Cloud outsourcing provides customers with a level of flexibility and predictability that traditional outsourcing models often do not, according to Steve Garrou, vice president, of Global Solutions Management at Savvis.

"Clients come to us for data center outsourcing. What they are really looking for is flexible spend with predictable results. The capital environment where they can spend what they want and when is changing rapidly. They are looking for a model that matches more with what the cloud model provides."


Gilad Parann-Nissany, Porticor

Outsourcing to the cloud can also position companies to use the cloud to provide new services to clients and enter new markets, driving revenue and growth. While some fear that cloud will contribute to the demise of the IT department, Garrou maintains the converse is true in that IT is playing a pivotal role in so-called cloud sourcing.

"Cloud is another line of disruptors that we see in the IT services market. This is not a one-time phenomenon. IT is playing more of a role of portfolio management – the way they do that is consistent across customers," adds Garrou, underscoring the increasing role CIOs have in managing multiple service providers.

Part of the benefit of cloud is the introduction of a self-service model, where outsourcing can be achieved through a self-service user interface and even through automation. This in turn drives ever lower costs, making for a huge benefit to enterprise IT, adds Porticor's Parann-Nissany. However, enterprise solutions also tend to use more sensitive business data, and as this new kind of outsourcing changes the market, the need for security solutions that are built for the cloud becomes paramount.

Today, new practices and technology are emerging, which allow organizations to outsource to the cloud, while keeping control. "Split key encryption" is the practice of protecting data and processes through multiple keys; master keys remain in the hands of IT project owners or even business owners.


Steve Garrou, Savvis

"Data can be in the cloud but control remains completely in the hands of the business," he explains.

"Homomorphic key encryption" is the practice of encrypting encryption keys, in such a way that even when they are used, they are still encrypted and kept private. The true "keys to the kingdom" remain in the hands of IT.

"Such innovative approaches allow IT to have their cake and eat it too," says Parann-Nissany. "Outsource to the cloud more and more, enjoy the benefits of flexibility and economy, yet keep IT as the trusted face of the digital revolution."

by Erin E. Harrison

Why Businesses Need to Put APM in the Cloud Ahead of Anything Else

As more companies look towards implementing a variety of cloud deployments to gain infrastructure efficiencies and operational cost savings, many times planning for application performance management (APM) gets lost in the process of defining the infrastructure requirements and implementation of the cloud components.

Cloud Computing recently had the opportunity to catch up with APM expert P.J. Malloy, senior vice president of R&D at OPNET Technologies, about the trend towards cloud computing and the role of APM in the cloud.

In today's IT environment, many organizations are looking to the cloud, however, some critical areas may be overlooked during the planning stages – including the role of APM.

"Many companies are not thinking about application performance until they are rolling out to the cloud," explains Malloy. "They don't necessarily have a plan, but you can't ignore the significance of application performance management."

Although cloud promises greater efficiency and productivity, it brings decreased visibility of end-user transactions within the applications. As Malloy points out, you can't manage what you can't see – which is why visibility is so crucial in a cloud environment.

Surprisingly, the acceleration of cloud adoption has not necessarily heightened awareness of APM, but Malloy says it needs to be brought into focus in the early stages – whether an IT department is adopting a private, public or hybrid cloud model.

"We are approaching an inflection point on cloud adoption where more pilot programs will be graduating to full-fledged deployment. With that will come growing pains, as you can see with public cloud providers having outages. But with the right tools and processes in place, I am sure this industry will mature through those growing pains very quickly," predicts Malloy. "The private cloud has been a very strong force all along; and prior to private cloud, virtualization was a massive transformation for IT. We are definitely seeing an acceleration of cloud. Twelve to 18 months ago, more startups or SMEs were adopting the cloud, and now we're seeing a much greater acceleration of cloud adoption within the Fortune 500 and Global 2000."

P.J. Malloy, senior vice president of R&D at OPNET Technologies

Is there an ideal or one-size-fits-all approach for planning an application performance management strategy for the cloud?

"APM is offering a new paradigm; rather than managing separate components, the focus is on end-user experience," Malloy explains. "Managing application performance from the end-user perspective removes a lot of the ambiguity and subjectivity that comes into the conversation."

Malloy also emphasizes the importance of taking a "transaction-centric" approach when planning an APM strategy.

"Instead of looking at CPU or RAM utilization, it's very important to actually monitor the performance of individual transactions. For example, how many times did users click the 'submit' button?" explains Malloy. "How long does that transaction take? It's important to have the proper instrumentation that gives visibility at the transaction level rather than more basic tier-by-tier basis and recognize that APM is focused on collecting data.

So how is the approach for APM different in the cloud? According to Malloy, cloud adds a layer of complexity not present with on-premise technologies.

"Cloud is another step in the complexity curve – it's more distributed, more monetized – therefore cloud is bringing more performance challenges including an inherent loss of control and visibility, which interferes with application performance," explains Malloy. "OPNET has tackled to restore visibility – there is no one-size-fits-all approach, but it needs to be a flexible approach that has options."

OPNET offers federated analytics which distributes analysis processing across the entire cloud environment and can process the data without having to move much around the cloud, according to Malloy. The other unique piece that OPNET brings to the table is dealing with the network service provider.

"It becomes very important to hold them accountable. That is where APM as a discipline can really shine in identifying cross-silo issues and resolving them," says Malloy.

As more applications are being hosted in the cloud, it makes sense to use the cloud to leverage the management of those applications. For example, OPNET provides a Software-as-a-Service (SaaS) offering, what Malloy calls a "cloud-friendly" way to monitor end-user experience for small to medium-sized businesses (SMBs) up to the largest global enterprises.

Regardless of how a company migrates to the cloud, or what size that organization is, IT departments must above all else practice due diligence.

"You need to do your due diligence…most organizations will have a hybrid approach. It's important to have a unified APM approach regardless of the different models," says Malloy.

"Especially with public cloud, you can have users from around the world. Whether it's the general public or employees accessing applications in the cloud, or Java-script based instrumentation – we can monitor application performance from anywhere based on almost any format of that application," says Malloy.

Certainly IT decision makers are tasked with many responsibilities when they consider moving into the cloud. However, the first step when considering a cloud strategy, contends Malloy, is long-term planning.

"As with any technology migration strategy, planning is critical, especially factoring for any downtime. OPNET has a long history in helping customers accomplish that. By offering APM as a discipline, we enable the restoration of visibility of application behavior and performance which allows companies to take on migration to a cloud infrastructure," says Malloy. "We help people understand exactly what their true end-user experience is in terms of providing a concrete picture and by assembling that with very detailed performance data, we are able to very quickly identify the root cause of a performance issue if one were to occur."

Cloud APM Best Practices

Accountability: The most important piece of any cloud strategy is to have a plan to be able to hold different constituents accountable if the system is not performing well or you are encountering other problems. You need to have a visibility strategy from an APM perspective so that if things do happen, you can see what's going on.

Network Performance: Organizations must consider the impact of the network. The network is becoming the back plane. As you move to the cloud, you need to be acutely aware of the network impact on application performance. Data servers can be very sensitive to network latency.

Transparency: It's important to have the right process and tools to be able to plan and triage between silos. APM can be an important way to transfer the knowledge between silos and avoid finger pointing.

by Erik Linask

Beyond the Hype Cycle, Cloud Means Real Business

For the past two years, the hype around cloud has done nothing but grow, with vendor after vendor touting its latest and greatest cloud-based solutions that will help businesses become more agile and efficient. But, as anyone who has followed the tech space knows, hype is always followed by questions.

In the case of cloud, the questions have centered on security – always a challenge with new technology – and migration strategy – how can businesses effectively leverage cloud computing while continuing to leverage their existing infrastructure. Both are typical of any new technology and very logical concerns, given the number of attacks targeting cloud providers, with the average data breach costs businesses somewhere in the neighborhood of $7 million or more.

Since then, there have been some businesses that have started using cloud services for a large part of their business, but by and large, it's been for new services and applications and, particularly, in test scenarios or for non-critical applications, as the industry sought to find some standardization around cloud that would help address some of the inhibitors to widespread migration.

As I made my way from vendor to vendor at Cloud Expo recently (see check out all of TMC's videos from the event here: http://tmcnet.com/59197.1), a strong sense of progress was unmistakable, as the common theme was the businesses are starting to do more with cloud and moving more of their mission-critical applications and sensitive data into cloud environments.

"Companies are moving more of their mission critical and database intensive applications into the cloud," confirmed Hostway's vice president of marketing Aaron Hollobaugh. "It's really being used to drive the production environments for both large and small businesses and many smaller businesses are looking to migrate everything to the cloud."

He adds that, in particular, smaller businesses are very interested in moving as

There are still questions around security and compliance, but recognizing it as a major obstacle to growth, vendors have been quick to address concerns, focusing not only on physical network security, but also developing security measures to protect data from application layer breaches. An increase in standardization, both in terms of language and technology has helped increase confidence in cloud services.

"One of the biggest inhibitors is a perceived fear around data security, which may diverge a bit from reality," notes John Thielens, chief architect of cloud services at Axway. "There are economies of scale around cloud, and a cloud provider using good tool can do a better job of protecting the data on your behalf than you would do yourself. Especially for smaller companies, cloud makes good sense from a security perspective, provided the providers are transparent about the kind of security they are providing."

The trends are evident though, as business are being pushed to find ways to leverage cloud computing to drive cost and business process efficiencies. The security and compliance requirements don't change – it's just a case of having to trust these elements to third parties and, as Dan Rojas, director of strategic development notes, cloud providers have to provide appropriate security measures – they have too much at stake and, perhaps more importantly, if they don't there are plenty of other providers that will. Security isn't optional – it's table stakes at this point.

Because providers are taking security requirements seriously, the cloud movement is gaining real momentum, beyond just the hype we've witnessed in the past.

"It's come past the education point and businesses are starting to understand the prevalent and common definitions of cloud infrastructures," says Right Scale's Matthew Small. "They're coming to the realization that that operational process has just, hands down, won day in terms of what they want to do moving forward."

That's not to say there are no security concerns, but cloud providers are clearly listening and are not only developing new and innovative cloud services – from storage to application and content delivery to big data analytics to disaster recovery and more – but they are prioritizing security and building trusted relationships with enterprises that can the focus on their business operations and realize the benefits of cloud computing.

Because the trends are so clear and businesses are looking to do more in the cloud and are looking to migrate more critical business applications into cloud environments, TMC has launched its newest conference event, Cloud4SMB Expo (www.cloud4smbexpo.com), which will be held in Austin, Texas, October 2-5, collocated with ITEXPO West 2012 (www.itexpo.com), along with Cloud Communications Expo (www.cloudcommunicationsexpo).

While ITEXPO has been focusing on the cloud opportunity for some time now, the Cloud4SMB agenda is dedicated to furthering the conversations we've had around cloud computing and how the SMB market, specifically, can move into cloud computing to enhance their operations and increase revenues. If you're even remotely thinking about how cloud computing can help your business grow, this is a can't-miss event – and if you're not thinking about cloud, you should. I hope to see you in Austin.